SEQUENCE LISTING

<110> GMR Epigenetics Corporation

<120> Gene inactivation by targeted DNA methylation

<130> GMR-001ORD

<140> US 09/643,128
<141> 2000-08-21

<150> US 60/196,749
<151> 2000-04-12

<150> US 60/214,148
<151> 2000-06-26

<160> 54

<170> PatentIn version 3.3

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2). Semi-methylated hairpin loop

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2). Semi-methylated hairpin loop

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cgacgtcgtc gagcccgggc tgggaggagt cgg 33

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2). Sequence derived from the promoter of human c-myc gene.

3). Semi-methylated loop.

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tcgctaatct ccgcccaccg g 21

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2) Complementary to promoter of human c-myc.

3) Semi-methylated hairpin.

<400> 5
accggccctt tataatgcga 20

<210> 6
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2). Sequence derived from the promoter of human c-myc gene.

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<223> 1): Phosphothioate oligonucleotide modified with 5-methylcytidine (m5C) at positions 3 and 10. 3

2) Sequence complementary to the promoter of human c-myc gene.

3) Semi-methylated hairpin.

<400> 6
tccgcccacc ggcccttat 20

<210> 7
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2). Sequence derived from the promoter of HIV gene.

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cacgtagccc gagagctg 18

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2). Sequence derived from the promoter of HIV gene.

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cccgagagct gcatccgg 18

<210> 9
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2). Sequence derived from the promoter of HIV gene.

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<223> 3). Semi-methylated hairpin.

<220>
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<400> 9
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<210> 10
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2) Sequence derived from the promoter of human uPAR gene.

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<222> (1)..(18)
<223> 3). Semi-methylated hairpin.

<400> 10

aggcgcccac gcatctgg 18

<210> 11
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2). Sequence derived from the promoter of human uPAR gene.

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<400> 11
tcgctctttc gcaaaacgt 19

<210> 12
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2). Sequence derived from the promoter of human uPAR gene.

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<400> 12
acgcatctgg ggctgact 18

<210> 13
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2). Sequence derived from the promoter of human VEGF gene.

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<400> 13
gttataaatc gcccccgc 18

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2). Sequence derived from the promoter of human VEGFR gene.

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<223> 3). Semi-methylated hairpin loop

<400> 14
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2). Sequence derived from the promoter of human VEGFR gene.

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acccctgac gtcaccag 18

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2). Sequence derived from the promoter of human VEGFR gene.

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2). Sequence derived from the promoter of human flk-1 gene.

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<400> 17
cctgcactga gtcccgg 17

<210> 18
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2). Sequence derived from the promoter of human VEGF gene.

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<210> 19
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2). Sequence derived from the promoter of human integrin beta 3 gene.

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<222> (1)..(18)
<223> 3). Semi-methylated hairpin loop

<400> 19
cactgtgggg cgggcgga 18

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2). Sequence derived from the promoter of human integrin beta 3 gene.

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<223> 3). Semi-methylated hairpin loop

<400> 20
tgcgtcccac ccaccgcg 18

<210> 21
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2). Sequence derived from the promoter of human 12-lipoxyenase gene.

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<223> 3). Semi-methylated hairpin loop

<400> 21
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2). Sequence derived from the promoter of human 12-lipoxygenase gene.

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<223> 3). Semi-methylated hairpin loop

<400> 22
cctgggcggt cccgggca 18

<210> 23
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<220>
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<222> (1)..(19)
<223> 2). Sequence derived from the promoter of human beta-amyloid protein precursor gene.

3). Semi-methylated hairpin loop.

<220>
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<210> 24
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3). Semi-methylated hairpin loop.

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2). Sequence derived from the promoter of human VEGF gene.

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2). Sequence derived from the promoter of human VEGF gene.

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<210> 27
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sequence.

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2). Sequence derived from the promoter of human IGF1 gene.

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2). Sequence derived from the promoter of human IGF1 gene.

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<400> 28
ccagctgttt tcctgtct 18

<210> 29
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2). Sequence derived from the promoter of human Her2 gene.

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<400> 29
gctgcttgag gaagtataag 20

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2). Sequence derived from the promoter of human Her2 gene.

3). Semi-methylated hairpin loop.

<400> 30
agaatgaagt tgtgaagctg 20

<210> 31
<211> 18
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2). Sequence derived from the promoter of human TNF-alpha gene.

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<223> 1). Phosphothioate oligonucleotide modified with 5-methylcytidine (m5C) at position #4.

2). Sequence derived from the promoter of human TNF-alpha gene.

3). Semi-methylated hairpin loop.

<400> 31
tgccgttcct ctataaag 18

<210> 32
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<220>
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2). Sequence derived from the promoter of human TNF-alpha gene.

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<223> 3). Semi-methylated hairpin loop.

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agggacctga gcgtccgg 18

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<220>
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<223> 1). Phosphothioate oligonucleotide modified with 5-methylcytidine (m5C) at positions #2 and #7.

2). Sequence derived from the promoter of human TNF-beta gene.

3). Semi-methylated hairpin loop.

<220>
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<222> (1)..(21)

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tcgccccagg gacatataaa g 21

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<220>
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2). Sequence derived from the promoter of human TNF-beta gene.

3). Semi-methylated hairpin loop.

<400> 34
catataaagg cagttgtt 18

<210> 35
<211> 18
<212> DNA
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<220>
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<222> (1)..(18)
<223> 1). Phosphothioate oligonucleotide modified with 5-methylcytidine (m5C) at positions #4, #11 and #15.

2). Sequence derived from the promoter of human TNF-beta gene.

<220>
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<222> (1)..(18)

<220>
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<222> (1)..(18)
<223> 3). Semi-methylated hairpin loop.

<400> 35
acccagccag cagacgct 18

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<222> (1)..(18)
<223> 1). Phosphothioate oligonucleotide modified with 5-methylcytidine (m5C) at positions #2 and #8.

2). Sequence derived from the promoter of human interleukin 4 gene.

3). Semi-methylated hairpin loop.

<220>
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<222> (1)..(18)

<400> 36
tcggtttcag caatttga 18

<210> 37
<211> 19
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<220>
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<222> (1)..(19)
<223> 1). Phosphothioate oligonucleotide modified with 5-methylcytidine (m5C) at position #16.

2). Sequence derived from the promoter of human IL-4 gene.

3). Semi-methylated hairpin loop.

<400> 37
tagagatatc tttgtcagc 19

<210> 38
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<220>
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<222> (1)..(19)
<223> 1). Phosphothioate oligonucleotide modified with 5-methylcytidine (m5C) at position #3.

2). Sequence derived from the promoter of human GM-CSF gene.

<220>
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<222> (1)..(19)

<220>
<221> CpG dinucleotide
<222> (1)..(19)
<223> 3). Semi-methylated hairpin loop.

<400> 38
ctctgtgtat ttaagagct 19

<210> 39
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2). Sequence derived from the promoter of human GM-CSF gene.

3). Semi-methylated hairpin loop.

<220>
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<222> (1)..(19)

<400> 39
ccgcctccct ggcattttg 19

<210> 40
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<220>
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2). Sequence derived from the promoter of human IL-2 gene.

3). Semi-methylated hairpin loop.

<400> 40
ccagagagaa gagtataat 19

<210> 41
<211> 18
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<222> (1)..(18)
<223> 1). Phosphothioate oligonucleotide modified with 5-methylcytidine (m5C) at position #5.

2). Sequence derived from the promoter of human bcl-2 gene.

3). Semi-methylated hairpin loop.

<400> 41
atagctggat tataactc 18

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<220>
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<222> (1)..(18)
<223> 1). Phosphothioate oligonucleotide modified with 5-methylcytidine (m5C) at position #2.

2). Sequence derived from the promoter of human bcl-2 gene.

3). Semi-methylated hairpin loop.

<400> 42
tcgtccaaga atgcaaag 18

<210> 43

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<220>
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<222> (1)..(18)
<223> 1). Phosphothioate oligonucleotide modified with 5-methylcytidine (m5C) at position #13.

2). Sequence derived from the promoter of human HBV gene.

3). Semi-methylated hairpin loop.

<400> 43
cagccatgga aacgatgt 18

<210> 44
<211> 19
<212> DNA
<213> Artificial sequence

<220>
<223> This sequence is complementary to and methylates a human sequence.

<220>
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<222> (1)..(19)
<223> 1). Phosphothioate oligonucleotide modified with 5-methylcytidine (m5C) at positions #6 and #17.

2). Sequence derived from the promoter of human HBV gene.

3). Semi-methylated hairpin loop.

<220>
<221> CpG dinucleotide
<222> (1)..(19)

<400> 44
tgaagcgaag tgcacacgg 19

<210> 45
<211> 18
<212> DNA
<213> Artificial sequence

<220>
<223> This sequence is complementary to and methylates a human sequence.

<220>
<221> CpG dinucleotide

<222> (1)..(18)
<223> 1). Phosphothioate oligonucleotide modified with 5-methylcytidine (m5C) at positions #4, #13 and #15.

2). Sequence derived from the promoter of human HBV gene.

<220>
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<222> (1)..(18)
<223> 3). Semi-methylated hairpin loop.

<400> 45
agacggtgag accgcgta 18

<210> 46
<211> 19
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<213> Artificial sequence

<220>
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<220>
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<222> (1)..(19)
<223> 1). Phosphothioate oligonucleotide modified with 5-methylcytidine (m5C) at position #16.

2). Sequence derived from the promoter of human HBV gene.

3). Semi-methylated hairpin loop.

<400> 46
tgcatggtgc tggtgcgca 19

<210> 47
<211> 20
<212> DNA
<213> Artificial sequence

<220>
<223> This sequence is complementary to and methylates a human sequence.

<220>
<221> CpG dinucleotide
<222> (1)..(20)
<223> 1). Phosphothioate oligonucleotide modified with 5-methylcytidine (m5C) at positions #5, #12 and #18.

2). Sequence derived from the promoter of CMV gene.

<220>
<221> CpG dinucleotide
<222> (1)..(20)
<223> 3). Semi-methylated hairpin loop.

<400> 47

tgggcggtag gcgtgtacgg 20

<210> 48
<211> 19
<212> DNA
<213> Artificial sequence

<220>
<223> This sequence is complementary to and methylates a human sequence.

<220>
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<222> (1)..(19)
<223> 1). Phosphothioate oligonucleotide modified with 5-methylcytidine (m5C) at positions #2, #14 and #17.

2). Sequence derived from the promoter of CMV gene.

<220>
<221> CpG dinucleotide
<222> (1)..(19)
<223> 3). Semi-methylated hairpin loop.

<400> 48
acggtaaatg gcccgcctg 19

<210> 49
<211> 18
<212> DNA
<213> Artificial sequence

<220>
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<220>
<221> CpG dinucleotide
<222> (1)..(18)
<223> 1). Phosphothioate oligonucleotide modified with 5-methylcytidine (m5C) at positions #2 and #13.

2). Sequence derived from the promoter of CMV gene.

<220>
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<222> (1)..(18)
<223> 3). Semi-methylated hairpin loop.

<400> 49
gcgtcaatgg ggcggagt 18

<210> 50
<211> 20
<212> DNA
<213> Artificial sequence

<220>

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<220>
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<222> (1)..(20)
<223> 1). Phosphothioate oligonucleotide modified with 5-methylcytidine (m5C) at positions #2 and #17.

2). Sequence derived from the promoter of human c-fos gene.

<220>
<221> CpG dinucleotide
<222> (1)..(20)
<223> 3). Semi-methylated hairpin loop.

<400> 50
acgcttgtta taaaagcagt 20

<210> 51
<211> 20
<212> DNA
<213> Artificial sequence

<220>
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<220>
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<222> (1)..(20)
<223> 1). Phosphothioate oligonucleotide modified with 5-methylcytidine (m5C) at positions #2, #13 and #18.

2). Sequence derived from the promoter of human c-fos gene.

<220>
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<222> (1)..(20)
<223> 3). Semi-methylated hairpin loop.

<400> 51
tcgtactcca accgcatctg 20

<210> 52
<211> 19
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<213> Artificial sequence

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<220>
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<223> 1). Phosphothioate oligonucleotide modified with 5-methylcytidine (m5C) at positions #2, #15 and #17.

2). Sequence derived from the promoter of human raf-1 gene.

<220>
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<222> (1)..(19)
<223> 3). Semi-methylated hairpin loop.

<400> 52
ccgagagtct taatcgcgg 19

<210> 53
<211> 18
<212> DNA
<213> Artificial sequence

<220>
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<220>
<221> CpG dinucleotide
<222> (1)..(18)
<223> 1). Phosphothioate oligonucleotide modified with 5-methylcytidine (m5C) at positions #2, #4 and #12.

2). Sequence derived from the promoter of human raf-1 gene.

<220>
<221> CpG dinucleotide
<222> (1)..(18)
<223> 3). Semi-methylated hairpin loop.

<400> 53
tcgcgcagaa tcggaggc 18

<210> 54
<211> 22
<212> DNA
<213> Artificial sequence

<220>
<223> This sequence is complementary to and methylates a human sequence.

<300>
<301> Yao X, Hu JF, Daniels M, Shiran H, Zhou X, Yan H, Lu H, Zeng Z, Wang Q, Li T, Hoffman AR.
<302> A methylated oligonucleotide inhibits IGF2 expression and enhances survival in a model of hepatocellular carcinoma.
<303> J Clin Invest
<304> 111
<305> 2
<306> 265-273
<307> 2003-01-15
<308> 12531883
<309> 2003-03-15
<313> (1)..(22)

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ggtcacggtc aggcgtagat gg 22